

Compliance Headliner

Spray on Truck Bed Liners and OSHA Compliance

SC OSHA recently conducted a compliance enforcement inspection of a spray in bed liner operation. Crandall Corporation would like to communicate an important issue to all service facilities who are engaged in or considering SPRAY-ON BEDLINER and UNDERCOATING operations. The two primary issues are employee health and exposure and the spray area facilities.

The primary health concern with spray-on polyurethane products such as bed liner coating and undercoating products are compounds within the coatings called methylene diphenyl isocyanate (MDI) and/or polymeric MDI (PMDI), which are isocyanates.

Isocyanates are powerful irritants to the mucous membranes of the eyes and gastrointestinal and respiratory tracts. Direct skin contact can also cause marked inflammation. Isocyanates can also sensitize workers, making them subject to severe asthma attacks if they are exposed again. Death from severe asthma in some sensitized subjects has been reported. Workers potentially exposed to isocyanates that experience persistent or recurring eye irritation, nasal congestion, dry or sore throat, cold-like symptoms, cough, shortness of breath, wheezing, or chest tightness should see a physician knowledgeable in work-related health problems.¹ Federal OSHA requires that all respiratory protective devices meet NIOSH standards and that employees use NIOSH approved equipment. Currently, there are no NIOSH approved air-purifying respirators for isocyanates because the isocyanates have poor warning properties. In these instances, a loose-fitting air supplied hood with a dedicated breathing air compressor would be adequate.

Of equal concern is recent OSHA citations pertaining to the areas in which spray on liner operations are conducted. Although OSHA has no specific regulations addressing spray-on bed liner operations, certain regulations may be applicable depending on the method of application, characteristics of the materials used, and facility design.

¹ (NIOSH WEBSITE)

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1. Spray-on bed liner coatings are applied using a variety of temperature and pressure settings. Generally, the warmer the application of the raw materials, the less potential for exposure to isocyanates. Conversely, cold application of the raw materials will likely yield a higher potential of employee exposure to isocyanates. In all instances, an air supplied hood and dedicated breathing air compressor is recommended. Otherwise, employers must conduct industrial hygiene studies to determine the level of employee exposure and determine whether air-purifying respirators are sufficient.
2. Under most circumstances and based on material safety data sheet reviews of the bed liner components from several vendors, spray-on bed liner and undercoating operations must be conducted within a fully compliant, paint spray booth equipped with automatic fire suppression. All regulations concerning "Spray finishing using flammable and combustible materials" 29 CFR 1910.107 apply. The key to determining applicability is twofold:
 - First, determine whether either component (part A or part B) is combustible. OSHA defines combustible materials as: "Combustible liquid means any liquid having a flashpoint at or above 100 degrees F."
 - a. Therefore, either part having ANY flashpoint, regardless of how high or low, meets the definition of combustible.
 - Second, the term "dual component" may be applicable to any two part coating. We do not have a clear interpretation from OSHA regarding the dual component definition. Therefore, we must assume that any two or more components would be subject to the regulations.
3. Contrary to the recommendations from most bed liner material vendors, the recommended design of the spray area for bed liners does not meet most of the requirements in 1910.107. Examples of current applications are service bays converted for spraying operations, fixed portable structures such as metal siding covers, and other make-shift structures may not be approved under strict interpretation of the regulation.
4. The following are some of the key requirements for 1910.107, but the list is not all inclusive:
 - Booth constructed of steel or other substantial, noncombustible material. 1910.107(b)(1)
 - Lighting inside booth isolated by noncombustible panels. 1910.107 (b)(10)
 - Electrical located inside spraying area Class I Group D or Class I Division I. 1910.107.(C)(6)
 - Quantity of flammable/combustible liquids in vicinity of spraying operations kept to 1 day's supply. 1910.107.(e)(2)
 - Sprinkler system installed / sprinkler heads not clogged or covered (cover <.003") NFPA 33 7.2 & 1910.107 (b)(5)(iv)
 - All spraying areas shall be provided with mechanical ventilation adequate to remove flammable vapors, mists, or powders to a safe location and to confine and control combustible residues so that life is not endangered. Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted and for a sufficient time thereafter to allow vapors from drying coated articles and drying finishing material residue to be exhausted. 1910.107(d)(2)

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5. Section 1910.107 requirements do not apply to outdoor spray applications of flammable and combustible materials of buildings, tanks, or other similar structures nor to small portable spraying apparatus **not used repeatedly in the same location**. Not used repeatedly in the same location is NOT defined. In this scenario, protective measures to control employee exposure must be implemented. In this case, overspray of material and clean up become a concern.

Since it is apparent that the regulations are applicable for most, if not all, spray-on bed liner operations conducted in a spray booth, regardless of design, there are a few options to comply with the applicable regulations:

1. Consider chemical substitution by replacing the combustible components with a brand or chemical composition that is not combustible or requires two parts. However, converting to non-combustible materials may have other consequences that include employee exposure to hazardous materials. Additionally, if the substitution consists of two part coatings, the regulations are likely applicable.
2. Modify and upgrade existing spray operations to meet the minimum standards identified in 1910.107. Basically, the spray booth must have all the elements of a commercially available paint spray booth used for traditional automotive paint applications.
3. Purchase a commercially available paint spray booth.

The bottom line is that most spray-on bed liner operations installed according to vendor recommendations are not compliant with OSHA regulations. Contrary to what some vendors may offer as support from other state OSHA agencies, each state agency adheres to their own policies and interpretation of federal and state law. South Carolina and North Carolina are “state plan states” and Georgia is under federal OSHA. States must follow the minimum federal standards, but have the right to enact more stringent requirements and enforce their interpretation of such requirements.

Any questions regarding this matter can be directed to your Crandall Corporation Compliance Specialist.

Aerosol Cans: A Little Can, A Lot to Think About!

Aerosol cans consist of two components – the contents (liquid and propellant) and the metal can (container). Propellants provide the driving force for ejecting the product from the can. Both liquefied and compressed gases are commonly used as propellants. The advantage of liquid propellants over compressed gas is that the pressure inside the container remains constant over time. This provides consistent delivery of the product. Some common liquefied propellants include hydrocarbons such as highly flammable propane, butane, or isobutane and to a decreasing extent, chlorofluorocarbons (CFCs). Compressed gas propellants such as carbon dioxide, nitrous oxide, nitrogen, or air have seen increased use in the effort to replace CFCs. A disadvantage of compressed gas is the drop in vapor pressure that occurs as the contents are depleted, causing changes in the delivery rate of the spray. However, in most cases various combinations of propellants are used to achieve the best economy, pressure, and safety.

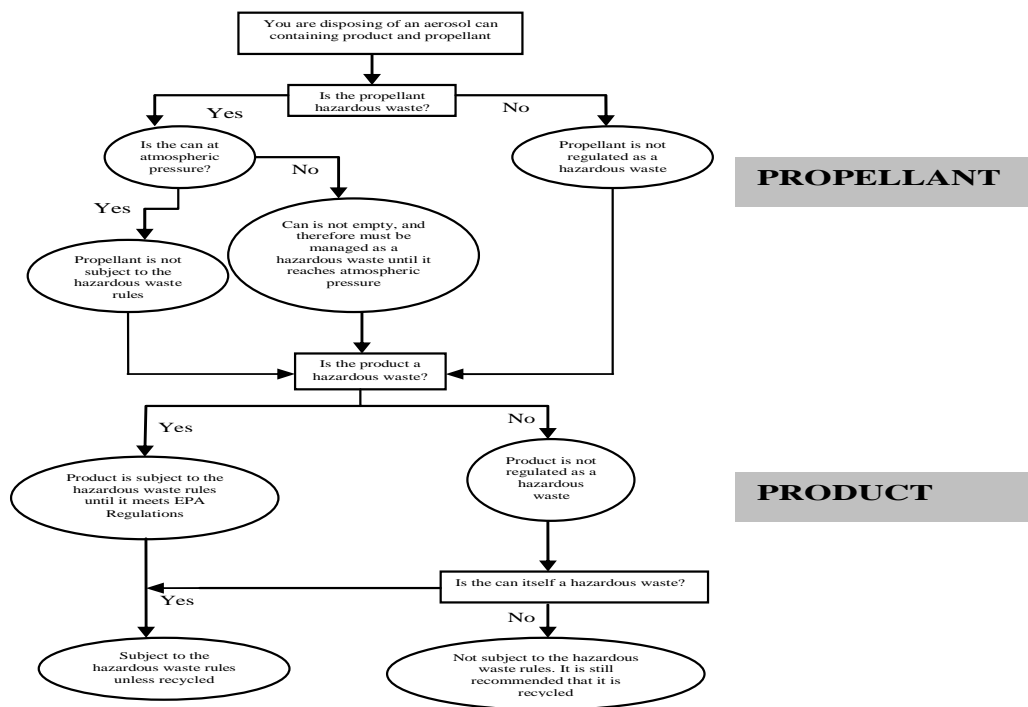
The liquid contents of aerosol cans may be one of many products that are delivered via aerosol cans. These liquid contents can range from brake cleaner, spray paint, cleaning solvent, etc. for a quick and easy delivery. Aerosol cans are utilized in many different settings including residential, automotive, and industrial settings. These uses include many different products that include chemicals that are listed hazardous wastes.

In the past, most steel aerosol containers were tin plated and soldered with tin lead alloys containing some antimony and silver. These hazardous metals are being eliminated from many can manufacturing operations through the use of mass production welding. The switch to welding eliminates the need for soldering and hence the need for tinplate. An internal coating of epoxy resin is used to protect the contents of the container from contamination from the can metals.

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Based on the above information and current regulations both the content and the container can be considered a hazardous waste. For instance, aerosol cans thought to be empty retain their hazardous classification because of the remaining volume of propane, butane, and other hydrocarbons due to the fact that they are flammable gases. The Environmental Protection Agency (EPA) has developed a Resource Conservation and Recovery Act (RCRA) definition of empty. First, the aerosol can must be emptied utilizing any of the common ways to remove materials, which includes pouring, pumping, and aspirating. The EPA has defined a container empty of liquid contents as follows, “No more than 2.5 centimeters (1 inch) of residue remain on the bottom of the container or no more than 0.3 percent by weight of the total capacity of the container remains in the container”. The EPA also defines when the propellant in the aerosol can is empty as follows, “A container that held a hazardous waste as a compressed gas is empty when the pressure in the container approaches atmospheric”. The most common way to achieve these is to puncture the can and have the liquid contents drain from the container and be captured. The aerosol can will also reach atmospheric pressure at this time as well. Below is a flow chart that will aid in the determination of whether aerosol cans are empty.



If the aerosol can did in fact formerly contain hazardous waste (whether propellant or liquid, or both) prior to being punctured it is a hazardous waste and cannot be recycled and is subject to hazardous waste regulations. If the liquid contents of the aerosol can were also a hazardous waste, then the contents that drained from the aerosol cans must be treated as hazardous waste and fall under hazardous waste regulations. Only those aerosol cans that are considered “RCRA empty” can be recycled as scrap metal. The liquid contents that have been drained from cans and collected must be disposed in the proper manner under hazardous waste regulations.

There are several options that can be taken to avoid using aerosol cans and having to work with this issue. One option is to utilize refillable spray bottles with the same product or a similar product to be used in your work processes. Another option is to replace solvents and brake cleaners in aerosol cans and utilize an onsite parts or brake washer during the work process. Utilizing these methodologies whenever it’s possible will help avoid utilizing aerosol cans at your facility. Utilizing can puncturing technology can also help you to limit the amount of hazardous waste generated at the facility.